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word.

AACAAGAAAAAGAAGGAGACTTCGAAGCAAGAATGCACAGAGAGCTATGAAATGACAGCTGAGTTG  
GACGATCTCACAGAGAAGATCCGAAAAGCTCACCAGGAAACTTTCCCTTCACTCTGCCAGCTGGGT  
AAATACACCACGAATTCCAGTGCTGACCATCGAGTCCGACTGGACCTGGGCCTCTGGGACAAATTC  
AGTGAAGTGGCCACCAAGTGCATTATTAAGATCGTGGAGTTTGCTAAACGTCTGCCTGGTTTCACT  
GGCTTGACCATCGCAGACCAAATTACCCTGCTGAAGGCCGCTGCCTGGACATCCTGATTCTTAGA  
ATTTGCACCAGGTATACCCAGAAACAAGACACCATGACTTTCTCAGACGGCCTTACCCTAAATCGA  
ACTCAGATGCACAATGCTGGATTTCCTCTGACTGACCTTGTGTTACCTTTGCCAACCAGCTC  
CTGCCTTTGGAAATGGATGACACAGAAACAGGCCTTCTCAGTGCCATCTGCTTAATCTGTGGAGAC  
CGCCAGGACCTTGAGGAACCGACAAAAGTAGATAAGCTACAAGAACCATTGCTGGAAGCACTAAAA  
ATTTATATCAGAAAAAGACBACCCAGCAAGCCTCACATGTTTCCAAAGATCTTAATGAAAATCACA  
GATCTCCGTAGCATCAGTGCTAAAGGTGCAGAGCGTGTAATTACCTTGAAAATGGAAATTCCTGGA  
TCAATGCCACCTCTCATTCAAGAAATGATGGAGAATTCTGAAGGACATGAACCCTTGACCCCAAGT  
TCAAGTGGGAACACAGCAGAGCACAGTCCTAGCATCTCACCAGCTCAGTGGAAAACAGTGGGGTC  
AGTCAGTCACCACTCGTGCAATAA,

wherein the DNA sequence is an isolated, synthetic, or cloned  
sequence.--

#### REMARKS

##### A. Amendment of Claims and Support Thereof

The specification has been amended to correct typographical errors in the nucleotide sequences recited. These amendments are supported by Fig. 2. In each instance, changes are made at the end of the sequences specified. The amino acid sequences at page 20 of the specification have also been amended, as supported by Fig. 2. Other changes have been made to conform the language to proper U.S. usage.

Claim 1 has been amended to correct typographical errors in the nucleotide sequence, as supported by Fig. 2. Claim 57 has also been amended for this purpose as well as to point out with greater particularity the source of the DNA fragments recited. Claim 38 has been cancelled without prejudice or disclaimer and the substance thereof, with changes in the nucleotide sequence to correct typographical errors, has been incorporated into a new claim 59. Since no new matter has been introduced, entry of the foregoing amendments are respectfully requested.

B. Rejection of Claims 4 to 9, 38, 39, 41, and 42  
under 35 U.S.C. § 112, second paragraph

The Official Action has rejected claims 4 to 9, 38, 39, 41, and 42 under 35 U.S.C. § 112, second paragraph. The Official Action asserts that the claims "are still dependant upon a claim drawn to a cloned DNA sequence encoding a polypeptide. The DNA sequences that are the subject of these claims do not appear to encode a polypeptide and certainly do not encode the same polypeptide." Official Action at page 2. The Action further asserts that it is "still unclear as to how these sequences relate to the parental sequence from which they were derived."

The Action has also rejected claims 38, 39, 41, and 42 as being "indefinite in claiming 'serotypic variants thereof' which are functionally undefined." Official Action at Page 2. Applicants respectfully traverse this rejection.

Claims 4-9, as amended, do not depend from a claim drawn to a cloned DNA sequence encoding a polypeptide, as asserted by the Official Action. Further, the relationship between the sequences recited and the sequence encoding the hap gene has been recited.

Claim 38 has been cancelled. Rejection thereof is moot. Without conceding the merits of the Action's assertions, and in order to expedite the prosecution of this application, applicants have amended claims 39, 41, and 42 to remove the objected terminology. Accordingly, the Action's rejection of claims 4-9, 38, 39, 41, and 42, under 35 U.S.C. § 112, second paragraph, is inapplicable to the present claims. Withdrawal of this rejection is respectfully requested.

II. Rejection of Claims 1-14, 24-34, and 38-57 Under  
35 U.S.C. § 103 Over Petrovich et al. in View of  
Hauptmann et al. and Krust et al.

Claims 1-14, 24-34, and 38-57 stand rejected under 35 U.S.C. § 103 over Petrovich et al. ("Petrovich"), in view of Hauptmann et al. ("Hauptmann") and Krust et al. ("Krust"). The Action asserts that the Petrovich reference "describes a cloned DNA sequence encoding a retinoic acid receptor protein which is 90% homologous to the claimed sequence," and that the Hauptmann reference "shows that the use of a cloned DNA sequence encoding a protein of a specific function to clone DNA sequences encoding functionally related proteins was a method that was old and routine in the art at the time the instant invention was made." Official Action at page 3.

The Action concludes that "[t]o use a DNA sequence encoding a retinoic acid receptor protein like the one described in the Petrovich reference to clone a DNA sequence encoding a related retinoic acid receptor protein by using a method like that exemplified here by the Hauptmann reference to allow for the production of the encoded product by recombinant DNA methods was obvious to one of ordinary skill in molecular biology at the time the instant invention was made." Official Action at pages 3 to 4.

The Action further alleges that the Krust reference "identifies the functionally conserved regions common to steroid related receptor proteins and ... the functionally non-conserved regions that one of ordinary skill would recognize as having utility in distinguishing between DNA sequences encoding related receptor proteins having different ligand specificities." Official Action at p. 4. Applicants respectfully traverse this rejection.

To establish that a claimed invention would have been obvious over the prior art, the Patent and Trademark Office bears the burden of establishing that the cited references would have suggested the presently claimed invention or would have motivated a person of ordinary skill to produce the presently claimed invention. In this instance, the claimed invention relates to a cloned DNA sequence of hap gene having a recited nucleotide sequence. As the Official Action has acknowledged, Petrovich neither discloses nor suggests applicants' claimed invention. The Official Action further has not asserted nor established that the secondary references remedied the defects of Petrovich.

Accordingly, the Official Action has failed to establish a prima facie case of obviousness. The rejection of the present claims under 35 U.S.C. § 103 is, thus, not supported. The Action's assertions evidence a hindsight reconstruction of applicants' claimed invention, an exercise which has been held to be improper by the courts. In view thereof, applicants respectfully request withdrawal of the Section 103 rejection over the pending claims.

Applicants wish to direct the Examiner's attention particularly to claim 58, partially copied from the Evans et al. patent, U.S. Patent No. 4,981,784.

If there are any fees due in connection with the filing of this response, not previously accounted for, such fees should be charged to our Deposit Account No. 06-0916. If a fee is required for an extension of time and is not accounted for herein, such an extension is requested and any fees associated therewith should also be charged to our Deposit Account.

Respectfully submitted,

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